

CLAIMS

1. A receiver (20) for optical communications including:
at least one primary optical detector (12) for receiving radiation
5 from a radiation beam (16a) when the radiation beam is aligned with the
primary optical detector (12), and
at least one auxiliary optical detector (15a) arranged to receive
radiation from the radiation beam (16b) when the radiation beam is not aligned
with the primary optical detector (12),
10 characterised in that the receiver (20) further includes a diffuser
(13; 71) for redirecting radiation towards the auxiliary detector.
2. A receiver according to claim 1 including a focusing element (11;
70) for focusing the incoming radiation beam (16b) onto the primary optical
15 detector and/or the diffuser.
3. A receiver according to claim 2 including a receiver system (21)
for retrieving data from redirected radiation received at the auxiliary detector.
- 20 4. A receiver according to any preceding claim wherein the diffuser
is a reflector and is arranged to face substantially in the same direction as the
primary detector to reflect incoming radiation not aligned with the primary
detector, and the auxiliary detector is arranged to substantially face the
diffuser.
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5. A receiver according to claim 4 wherein the diffuser is arranged
in substantially the same plane as the primary detector, and the diffuser and
primary detector are positioned in or in proximity to the focal plane of the
focusing element.
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6. A receiver according to claim 2 including a control system (22,
23) connected to the auxiliary detector for aligning the primary detector with

respect to the radiation beam in at least one direction based on the intensity of radiation received at the auxiliary detector.

7. A receiver according to claim 6 wherein the control system aligns
5 the primary detector with the radiation beam by moving the primary detector.

8. A receiver according to claim 6 or 7 further including a redirecting
element arranged in the path of the incoming beam, wherein the control
system aligns the primary detector with the radiation beam by moving the
10 element.

9. A receiver according to any preceding claim including at least
one pair of auxiliary detectors (15a, 15b), each auxiliary detector being
arranged to output current dependent on the intensity of received radiation,
15 and the receiver includes means for calculating misalignment of the primary
detector with respect to the radiation beam based on the output signals of
each auxiliary detector (15a, 15b).

10. A receiver according to claim 9 including two pairs of auxiliary
20 detectors, wherein the calculating means is connected to both pairs of
detectors for calculating misalignment of the primary detector with respect to
the radiation beam in two substantially perpendicular directions.

11. An optical network including a plurality of nodes, a first said node
25 including a receiver according to any preceding claim and a second said node
including a transmitter for transmitting a radiation beam to be received by said
receiver.

12. An optical network according to claim 11, said first node including
30 both a transmitter for transmitting a radiation beam and a receiver and said
second node including a receiver, wherein the first node is arranged to align
the radiation beam output from the transmitter on the first node with respect to

the receiver on the second node, based on a signal output from the receiver in said first node.

13. An optical network according to claim 11 or 12 wherein the
5 second node is arranged to transmit a relatively narrow divergence data beam and relatively wide divergence auxiliary beam, and wherein the receiver in the first node is arranged to align the primary detector with respect to the auxiliary radiation beam.

10 14. An optical network according to claim 13 wherein the network is arranged such that aligning the primary detector with respect to the auxiliary radiation beam also aligns the primary detector with the data beam from the second node.

15 15. A receiver (20) for optical communications including:
at least one primary optical detector (12) for receiving an incoming radiation beam,
a redirecting surface (13) for redirecting an incoming radiation beam (16b),
20 at least one pair of auxiliary optical detectors (15a, 15b) arranged to receive redirected radiation from the surface (13), and
a control system connected to the auxiliary detectors (15a, 15b) for aligning the primary detector (12) and the incoming radiation beam (16b) in at least one direction,
25 characterised in that the surface (13) is a diffuser and the control system aligns the primary detector (12) and radiation beam (16b) based on the intensity of redirected radiation received at the auxiliary detectors (15a, 15b).